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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/650,787	08/30/2000	Krishna Balachandran	11-16-38	2047

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Docket Administrator (Rm. 3C-512)
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EXAMINER

WONG, BLANCHE

ART UNIT	PAPER NUMBER
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2667

DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/650,787

Applicant(s)

BALACHANDRAN ET AL.

Examiner

Blanche Wong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,2,3,7,11,12,13 is/are rejected.
- 7) ☐ Claim(s) 4-6 and 8-10 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other:

DETAILED ACTION

Drawings

1. Figures 1 and 20 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(b) because they are incomplete. 37 CFR 1.83(b) reads as follows:

When the invention consists of an improvement on an old machine the drawing must when possible exhibit, in one or more views, the improved portion itself, disconnected from the old structure, and also in another view, so much only of the old structure as will suffice to show the connection of the invention therewith.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, bursts/time slots, frames, channel, sub-channel(s), 0123/4567 and 0246/1357 interleaving, multiplexer(s), first and second station, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to under 37 CFR 1.83(b) because they are incomplete. 37 CFR 1.83(b) reads as follows:

When the invention consists of an improvement on an old machine the drawing must when possible exhibit, in one or more views, the improved portion itself, disconnected from the old structure, and also in another view, so much only of the old structure as will suffice to show the connection of the invention therewith.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Regarding claims 1 and 2, time division into a plurality of frames and frame division into data bursts are not shown or cannot be easily understandable in the diagrams provided. The same problem surfaces where a channel is a series of bursts that occur periodically and where a sub-channel is every M, not N, burst of said channel and other sub-channels of rate 1/M. Even if Fig. 1 is labeled Prior Art, there is no showing of the invention with a first and second stations.

Regarding claims 3-10,12, there is no showing of the present invention with 0246/1357 and 0123/4567 interleaving. It is noted that there are examples of how these two interleavings work, but not how they differ.

Regarding claim 11, there is no showing of the present invention with a first and second multiplexers.

Specification

5. It is noted on p.7 that GERAN document 2E99-584 is cited in the specification but is not found in the application. Therefore, the examiner has not review GERAN

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document 2E99-584 in its entirety. The examiner reviewed only the pertinent part of GERAN document 2E99-584 cited from p.7.

6. It is noted on p.15 that a half-rate traffic channel is commonly known as a communication channel "over 4 radio bursts spaced over 40 msec, with a chaining overlap of 2 radio bursts in 20 msec." 0246/1357 interleaving is described as "the use of alternate bursts for each of two half-rate channels over the 8 bursts in a 40 msec interval." 0123/4567 interleaving is described as "the alternative of block interleaving of 2 speech frames over 4 consecutive bursts in 20 msec intervals alternating between two half-rate channels."

7. The disclosure is objected to because of the following informalities: on p.34, ln.25, channel 1 is assigned 7 bursts, $j=0,1,2,3,4,5,6$, in multiframe 0, whereas there are 6 bursts, $j=6,7,8,9,10,11$, in multiframe 1.

Appropriate correction is required.

8. The disclosure is objected to because of the following informalities: abbreviation inconsistencies.

It is noted that there are abbreviation inconsistencies in the specification, for example, GERAN. On p.6, ln.2, GERAN is introduced and abbreviated from GSM Enhanced-General-Packet-Radio-Service Radio Access Network. On p.7, ln. 17, GERAN stands for GSM EDGE Radio Access Network and EDGE stands for Enhanced General Packet Radio Service. Although substitution would make the two GERANs equivalent, EDGE is not used in the former abbreviation on p.6 and additionally, EDGE

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is not included in the list of acronyms on p.7. Such inconsistency would make reading difficult and confusing.

Similar inconsistencies with respect to this and other abbreviations are found throughout the document. The applicant's cooperation to review the entire application thoroughly and make appropriate changes accordingly is appreciated.

Appropriate correction is required.

9. The disclosure is objected to because of the following informalities: wording inconsistencies.

It is noted that there are inconsistent wordings in the Brief Description of the Drawing, p.4-5. As indicated in the Description of the Prior Art, p.1, ln. 30-p.2, ln.3, uplink corresponds to downlink. Therefore, wordings for uplink should be consistent with wordings for downlink. Such wording inconsistency would make reading difficult and confusing. Appropriate correction is required.

Examples of inconsistent wordings in the Brief Description include:

- On p.4, ln.20 says "uplink traffic procedure," but ln.22,24,26,28 say either "uplink procedure" or "downlink procedure." It is suggested that ln.22,24,26,28 include the word "traffic" and should read either "uplink traffic procedure" or "downlink traffic procedure" respectively.
- Similarly, on p.5, ln.2 says "uplink control channel" but ln.5 says "downlink control channel procedure." It is suggested that ln.2 include the word "procedure" and should read "uplink control channel procedure."

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10. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 1 and 2 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 2, M and N are an infinite set of integers.

13. Claim 12 recites the limitation "0246/1357 sequence" in ln. 4. There is insufficient antecedent basis for this limitation in the claim.

Although 0246/1357 interleaving is defined in the specification, the 0246/1357 sequence is undefined.

14. Claims 1 and 11 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: data.

Regarding claim 1, ln. 7, and claim 11, ln. 7, it is not possible to transmit a channel and sub-channel. The channel and sub-channel merely form a path between first and second stations to transmit data.

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claims 1 and 2 rejected under 35 U.S.C. 102(b) as being clearly anticipated by Delprat et al. (U.S. Pat No. 5,398,247).

Regarding claim 1, Delprat discloses a system for communicating using wireless time division multiplexed communications (col. 1, ln. 6) in which time is divided into a plurality of frames (Framing is an inherent property of TDM.) and each frame is divided into N data bursts (col.1, ln. 7-11, "a physical transmission channel is time-divided into a plurality of logic channels which may be assigned to different communications, each logic channel consisting of time slots having a same serial number in successive frames of constant length")(In the application, burst is defined as a transmission in a slot and block is equal to 4 bursts on the same slot. p.1, ln. 30-p.2, ln.14), said system comprising: means for defining a channel as a series of bursts that occur periodically every N bursts once per frame (col.1, ln. 39-40, "It can be seen that the time distribution of the allocated time slots remains regular..."); means for defining a sub-channel as

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every Mth burst of said channel (col.2, ln.43-48, "one of the logic channels is divided into a plurality of sub-channels dedicated to different communications, characterized by assigning specific groups each of k successive time slots to each logic sub-channel, said groups being regularly time distributed..."); and means for transmitting said channel and sub-channel from a first station to a second station (A TDMA radio-communication method such as Delprat is an inherent property of a communication system between two stations.).

Regarding claims 2, Delprat also discloses channels of different rates that are realized by using multiple sub-channels of rate $1/M$. Col. 1, ln. 22-55, "Half-rate transmission is conventionally achieved by assigning a time slot having a predetermined number to one of the sub-channels in the odd frames and the same time slot to the other sub-channel in the even frames.... It is still increased when a logic channel is divided in more than two sub-channels." It is expected that Delprat is applicable to two or more sub-channels.

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

18. Claims 3 and 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Delprat and Raith et al. (U.S. Pat No. 5,987,019).

Substituting 0246/1357 interleaving with the definition in para. 2, claim 3 reads "The system of claim 2, wherein the use of alternate bursts for each of two half-rate channels over the 8 bursts in a 40 msec interval is used" and claim 7 reads "The system of claim 1, wherein the use of alternate bursts for each of two half-rate channels over the 8 bursts in a 40 msec interval is used."

Regarding claims 3 and 7, Delprat discloses the system in claims 1 and 2. However, Delprat did not clearly disclose how channels of different rates could be realized. Raith discloses how different rate, double- or triple-rate transmission, are achieved depending on the number of slots used and used slots are in alternating bursts. Table on col. 5. Because interleaving was well known to one of ordinary skill in the art at the time the invention was made, it would have been obvious to modify Delprat to include alternate bursts as that taught by Raith in order to provide sufficient flexibility for the anticipated variety of information communication. Col. 2, ln. 56-63.

19. Claims 3 and 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Delprat and Protopapas (U.S. Pat No. 4,928,273).

Regarding claims 3 and 7, Delprat discloses the system in claims 1 and 2. However, Delprat did not clearly disclose how channels of different rates could be realized. Protopapas discloses a time-division multiplexer/demultiplexer with deterministic time slot assignment that uses a slot assignment table. It can be seen from Protopapas that time slot are selectable and deterministic in alternating bursts. Because interleaving was well known to one of ordinary skill in the art at the time the invention was made, it would have been obvious to modify Delprat to include alternate

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bursts as that taught by Raith in order to utilize the full bandwidth of the frame. Col. 3, In. 55-60.

20. Claim 11 rejected under 35 U.S.C. 103(a) as being unpatentable over Delprat and Walters (U.S. Pat No. 4,617,658).

Regarding claim 11, Delprat discloses a system for communicating using wireless time division multiplexed communications (col. 1, In. 6) in which time is divided into a plurality of frames (Framing is an inherent property of TDM.) and each frame is divided into N data bursts (col.1, In. 7-11, "a physical transmission channel is time-divided into a plurality of logic channels which may be assigned to different communications, each logic channel consisting of time slots having a same serial number in successive frames of constant length")(In the application, burst is defined as a transmission in a slot and block is equal to 4 bursts on the same slot. p.1, In. 30-p.2, In.14), said system comprising: means for defining a channel as a series of bursts that occur periodically every N bursts once per frame (col.1, In. 39-40, "It can be seen that the time distribution of the allocated time slots remains regular..."); means for defining a sub-channel as every Mth burst of said channel (col.2, In.43-48, "one of the logic channels is divided into a plurality of sub-channels dedicated to different communications, characterized by assigning specific groups each of k successive time slots to each logic sub-channel, said groups being regularly time distributed..."); and means for transmitting said channel and sub-channel from a first station to a second station (A TDMA radio-communication method such as Delprat is an inherent property

of a communication system between two stations that are either transmitter or receiver, or transceivers).

However, Delprat did not indicate that the means for defining a channel as a series of bursts that occur periodically every N bursts once per frame, and means for defining a sub-channel as every Mth burst of said channel, are a first and second multiplexers. Walters discloses how a plurality of various rate subchannels are multiplexed onto a fixed rate channel. It would have been obvious to modify Delprat to include multiplexers to provide a plurality of various rate subchannels such as taught by Walters in order to define a frame structure that can be used to multiplex several subchannels of varying rates. Col.1, ln. 34-39.

Allowable Subject Matter

21. Claims 4,5,6,8,9,10 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

22. Claim 12 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

23. Claim 13 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Clark (U.S. Pat No. 3,662,114) discloses a frame synchronization system which includes multi-frames and subchannels.

Crisler et al. (U.S. Pat No. 5,594,738) discloses a time slot allocation method that uses a first packet that contains a request for allocation of time slots and a time slot allocator that allocates the number of time slots requested.

Engel (U.S. Pat No. 5,197,125) discloses an access assignment in a DAMA communication system. The access assignment or identification of time slots of a time frame within which to transmit messages is made possible by message access requests from different given user terminals that are stored in a memory and then processed to schedule the identified messages for transmission.

Kondo (U.S. Pat No. 5,748,624) discloses a method of time-slot allocation in a TDMA communication system that minimizes idle time-slots.

Raith et al. (U.S. Pat No. 5,818,829) discloses how slots are combined from a full-rate transmission to double- or triple-rate transmission.

Raith et al. (U.S. Pat No. 5,987,019) discloses a multi-rate radiocommunication systems and terminals. Type of information being transmitted is changed to adapt to variances in bandwidth. Timeslots are associated with formats.

Rozenblit (U.S. Pat No. 4,763,319) discloses a multi-rate synchronous virtual circuit network for voice and data communications. This transmission network can

handle a wide variety of traffic types ranging from the continuous transmission of batch data to the bursty transmission of voice and interactive data.

Sriram (U.S. Pat No. 4,914,650) discloses a bandwidth allocation and congestion control scheme for an integrated voice and data network. A multiplexer is used to arrange with a voice queue for storing voice packets and a data queue for storing data packets. The multiplexer allows each type of traffic to utilize any spare bandwidth momentarily available because it is not being utilized by the other type of traffic.

Tiedemann, Jr. et al. (U.S. Pat No. 5,509,015) discloses a method and apparatus for scheduling communication between transceivers that receive periodic messages in "slots."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blanche Wong whose telephone number is 703-305-8963. The examiner can normally be reached on Monday through Friday, 830am to 530pm.

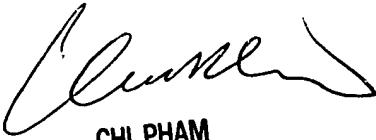
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H Pham can be reached on 703-305-4378. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

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BW


CHI PHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600 1/26/09